# SPEC CPU®2017 Integer Speed Result

## Huawei

(Test Sponsor: China Academy of Information and Communications Technology)

**Huawei CH121 V5 (Intel Xeon Gold 6258R)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 6177

**Test Sponsor:** China Academy of Information and Communications Technology

**Tested by:** China Academy of Information and Communications Technology

**Test Date:** Dec-2020

**Hardware Availability:** Feb-2020

**Software Availability:** Apr-2020

---

<table>
<thead>
<tr>
<th>software</th>
<th>SPECspeed2017_int_base (11.5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>6.93</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>10.5</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>19.2</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>10.0</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>14.0</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.97</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.95</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>17.0</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>25.0</td>
</tr>
</tbody>
</table>

---

### Hardware

- **CPU Name:** Intel Xeon Gold 6258R
- **Max MHz:** 4000
- **Nominal:** 2700
- **Enabled:** 56 cores, 2 chips
- **Orderable:** 1.2 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 38.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)
- **Storage:** 1 x 960 GB SAS SSD
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64) Kernel 4.12.14-94.41-default
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 6.83 released Jun-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Huawei
(Test Sponsor: China Academy of Information and Communications Technology)

Huawei CH121 V5 (Intel Xeon Gold 6258R)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Tested by: China Academy of Information and Communications Technology

Test Date: Dec-2020
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>56</td>
<td>256</td>
<td>6.93</td>
<td>256</td>
<td>6.94</td>
<td>256</td>
<td>6.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>56</td>
<td>381</td>
<td>10.5</td>
<td>378</td>
<td>10.5</td>
<td>372</td>
<td>10.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>56</td>
<td>246</td>
<td>19.2</td>
<td>246</td>
<td>19.2</td>
<td>245</td>
<td>19.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>56</td>
<td>164</td>
<td>9.94</td>
<td>161</td>
<td>10.1</td>
<td>162</td>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>56</td>
<td>101</td>
<td>14.0</td>
<td>101</td>
<td>14.0</td>
<td>101</td>
<td>14.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>56</td>
<td>106</td>
<td>16.7</td>
<td>106</td>
<td>16.6</td>
<td>106</td>
<td>16.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
<td>240</td>
<td>5.97</td>
<td>240</td>
<td>5.96</td>
<td>240</td>
<td>5.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>56</td>
<td>344</td>
<td>4.95</td>
<td>344</td>
<td>4.95</td>
<td>344</td>
<td>4.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>56</td>
<td>173</td>
<td>17.0</td>
<td>175</td>
<td>16.8</td>
<td>173</td>
<td>17.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
<td>247</td>
<td>25.0</td>
<td>247</td>
<td>25.0</td>
<td>248</td>
<td>24.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.
The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/opt/intel/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64:/usr/local/jemalloc64-5.0.1"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

(Continued on next page)
General Notes (Continued)

is mitigated in the system as tested and documented.
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
  sync; echo 3> /proc/sys/vm/drop_caches
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS configuration:
Power Policy Set to Load Balance
Hyper-Threading Set to Disabled
XPT Prefetch Set to Enabled

Sysinfo program /spec2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
running on linux-j3dr Wed Dec 30 20:01:11 2020

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
  https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) Gold 6258R CPU @ 2.70GHz
  2 "physical id"s (chips)
  56 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following
excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 28
  siblings : 28
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
  28 29 30

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
Huawei CH121 V5 (Intel Xeon Gold 6258R)

CPU2017 License: 6177  
Test Sponsor: China Academy of Information and Communications Technology  
Tested by: China Academy of Information and Communications Technology

SPECspeed®2017_int_base = 11.5  
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 6177  
Test Date: Dec-2020  
Hardware Availability: Feb-2020  
Test Sponsor: China Academy of Information and Communications Technology  
Software Availability: Apr-2020

Platform Notes (Continued)

Byte Order: Little Endian  
CPU(s): 56  
On-line CPU(s) list: 0-55  
Thread(s) per core: 1  
Core(s) per socket: 28  
Socket(s): 2  
NUMA node(s): 2  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Gold 6258R CPU @ 2.70GHz  
Stepping: 7  
CPU MHz: 2700.000  
CPU max MHz: 4000.0000  
CPU min MHz: 1000.0000  
BogoMIPS: 5400.00  
Virtualization: VT-x  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 1024K  
L3 cache: 39424K  
NUMA node0 CPU(s): 0-27  
NUMA node 0 CPU(s): 0-27

Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx  pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pni ptm tsc pln pts pku ospke avx512_vnni f16c flush_l1d arch_capabilities

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

available: 2 nodes (0-1)  
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27  
node 0 size: 385551 MB  
node 0 free: 384746 MB  
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55  
node 1 size: 387065 MB

(Continued on next page)
Huawei CH121 V5 (Intel Xeon Gold 6258R)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Test Date: Dec-2020
Tested by: China Academy of Information and Communications Technology
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Platform Notes (Continued)

node 1 free: 386756 MB
dnode distances:
0: 10 21
1: 21 10

From /proc/meminfo
MemTotal: 791159924 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 4
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Dec 30 19:41

SPEC is set to: /spec2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 734G 46G 689G 7% /

(Continued on next page)
Huawei
(Test Sponsor: China Academy of Information and Communications Technology)

Huawei CH121 V5 (Intel Xeon Gold 6258R)

**SPECspeed®2017_int_base** = 11.5

**SPECspeed®2017_int_peak** = Not Run

---

**CPU2017 License:** 6177
**Test Sponsor:** China Academy of Information and Communications Technology
**Test Date:** Dec-2020
**Tested by:** China Academy of Information and Communications Technology
**Hardware Availability:** Feb-2020
**Software Availability:** Apr-2020

---

**Platform Notes (Continued)**

From /sys/devices/virtual/dmi/id
BIOS: INSYDE Corp. 6.83 06/29/2019
Vendor: Huawei
Product: CH121 V5
Product Family: Purley
Serial: 210200351910KC000123

Additional information from dmidecode follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)

---

**Compiler Version Notes**

```
==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
       | 625.x264_s(base) 657.xz_s(base)
==============================================================================
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

```
==============================================================================
C++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
       | 641.leela_s(base)
==============================================================================
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

```
==============================================================================
Fortran | 648.exchange2_s(base)
==============================================================================
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```
Huawei CH121 V5 (Intel Xeon Gold 6258R)

**Base Compiler Invocation**

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

**Base Portability Flags**

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Huawei
(Test Sponsor: China Academy of Information and Communications Technology)

Huawei CH121 V5 (Intel Xeon Gold 6258R)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-mbranches-within-32B-boundaries

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revB.xml
http://www.spec.org/cpu2017/flags/CAICT-Platform-Settings-V1.3.xml

CPU2017 License: 6177
Test Sponsor: China Academy of Information and Communications Technology
Test Date: Dec-2020
Hardware Availability: Feb-2020
Tested by: China Academy of Information and Communications Technology
Software Availability: Apr-2020